REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 4, and 33-41 are pending, with Claims 39-41 added by the present amendment.

In the Official Action, Claims 35-38 were withdrawn; Claims 1, 4 and 33-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ye (U.S. Patent No. 6,414,788) in view of Chan (U.S. Patent Publication No. 2004/0051938); and Claims 1, 4 and 33-34 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ye in view of Gerish (U.S. Patent Publication No. 2002/0093729).

Applicants acknowledge with appreciation the personal interview between the Examiner and Applicants' representatives on October 26, 2006. During the interview, the Examiner indicated that Applicants' then proposed response, filed herewith, overcame the outstanding rejections.

Applicants file herewith a Declaration of Prior Invention Under 37 C.F.R. § 1.131 establishing a date of conception coupled with due diligence starting just prior to the September 16, 2006 filing date of Chan and continuing through the filing of priority document JP 2003-034135 on February 12, 2003.[1] In view of this filed Declaration, Chan is not available as a reference under 35 U.S.C. § 102.

Regarding paragraph two of the Official Action, the reference lined out on Applicants' PTO 1449 is the WIPO reference number for the reference initialed therein. No further action is required.

Briefly recapitulating, Claim 1 is directed to an optical amplifying method of an optical amplifier connected to an optical transmission line. The method includes the steps of:

[1] The date of the Invention Report attached to the declaration under 37 C.F.R. § 1.131 was removed by counsel.

detecting an optical input and output power of the optical amplifier; obtaining a difference between a measured gain of the optical amplifier and a target gain based on the detected optical input and output power to produce an error signal; applying the error signal to each of a proportional calculation and an integral calculation to create respective proportional and integral control signals, and adding proportional and integral control signals to create a drive current of at least one pump laser diode provided in the optical amplifier; controlling the gain of the optical amplifier with the drive current; and adjusting a control parameter of the proportional calculator in response to the detected optical input power. A non-limiting example of the claimed invention is shown in Applicants' Figure 6.

Ye describes a controller that calculates the appropriate power to be applied by the pumps based on the measured input and output signal powers of the amplifier. The control process implemented by the controller may be based on a combination of feedback and feed-forward control techniques. In step 80 of the process of Ye, the calculated feedback pump contribution and the calculated feed-forward pump contribution may be used to generate a desired value at which to drive the pump. A function that may be used is shown in equation 4 of Ye. As an example, the desired value may be calculated by linearly combining the calculated feedback pump contribution and the calculated feed-forward pump contribution. At step 82, the pump power calculated at step 80 may be adjusted to ensure that pump 56 operates within normal operating limits. At step 84, pump 56 may be driven at a calculated pump power level by supplying an appropriate drive signal to pump 56 using controller 52, digital to analog converter 72 and pump driver 74. By combining both feedback and feed-forward contributions when determining the level at which to drive the pump, drawbacks associated with using pure feedback and pure feed-forward approaches are avoided.[2] The

[2] Ye, column 6, line 63 through column 7, line 37.

calculated feedback pump contribution is based on a proportional integral derivative (PID) method, with parameters α, β and γ. Parameters α, β and γ are determined experimentally.[3]

However, as noted in the Official Action, Ye fails to disclose "adjusting a control parameter of a proportional calculator in response to a detected optical input power." The Official Action cites paragraphs [0042] and [0052] of Gerish as teaching that parameters in a PID calculation may be changed in response to a detected optical input power. Applicants traverse and note these paragraphs disclose:

> [0042] If the high-speed transients suppression is less important than steady-state control of gain or output power and, the amplifier module is required to monitor and process high volume of low speed signals such as remote commands and alarms a slower embedded system, with floating-point arithmetic capability can be used. A typical processor would include a Motorola Power PC.TM. running an "off the shelf" embedded operating system such as VX Works.TM.. The low frequency characteristics of the signals being processed allow implementation of more computationally demanding control/processing algorithms, such as adaptive control. This system can take care of system adjusting set points, remote commands, alarm processing, gain and temperature control, control parameters tuning, etc.
>
> [0052] The exemplary amplifier 100 of the present invention has a controller 120 with a capability of output power and gain transient suppression and temperature control of the laser pump diode. Control requirements, such as set point and control mode are remotely sent to the amplifier 100 via standard interface (serial, parallel or Ethernet). Monitoring signal and alarms from the amplifier are received by using the same interface. Two embedded processors allow high level of flexibility in the choice of control and processing algorithms. The technique of signal compression and dynamic range switching makes this device suitable for use in systems with very wide dynamic range of signals. This particular amplifier 100 utilizes two independently controlled pump lasers. The second pump is used to boost the signal power. The controller 120 may also utilize more sophisticated control algorithms, which can cope with some long-term effects, such as parameter changes caused by the optical component aging.

However, these passages merely describe that the controller 120 may use one or more undisclosed control algorithms to adjust set points to cope with component aging. Nothing in

[3] Ye, column 6, lines 52-63.

these paragraphs, nor any other portion of Gerish, discloses "adjusting a control parameter of a proportional calculator in response to a detected optical input power".

New Claims 39-41 are directed to an additional feature disclosed in Applicants' originally filed specification.[4] No new matter is added. Applicants submit that both Ye and Gerish also fail to disclose a control parameter of a proportional calculator that is increased according to an increase of optical input power.

MPEP §706.02(j) notes that to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Also, the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants' disclosure. *In re Vaeck,* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir.1991). Without addressing the first two prongs of the test of obviousness, Applicants submit that the Official Action does not present a *prima facie* case of obviousness because both Ye and Gerish fail to disclose all the features of Applicants' claimed invention.

Regarding withdrawn Claims 6, 8-11, 13-22, 24-27 and 29-32, Applicants note that independent Claims 11 and 22 are directed to an apparatus and system corresponding to the method recited in Claim 1. Furthermore, independent Claim 6, 16 and 27 are directed to a corresponding method, apparatus, and system, albeit with the additional limitation of "inputting/outputting optical signals of prescribed wavelengths to/from said optical transmission line by said optical wavelength division-multiplexing device." Independent

[4] Specification, page 21, line 17 – page 23, line 10.

Claims 16 and 27 differ from Claims 11 and 22 in a similar fashion. Independent Claims 21 and 32 also recite features similar to those of Claim 1. In view of these similarities, Applicants respectfully request rejoinder of withdrawn Claims 6, 8-11, 13-22, 24-27 and 29-32.

Accordingly, in light of the previous discussion, Applicants respectfully submit that the present application is in condition for allowance and respectfully request an early and favorable action to that effect.

Respectfully submitted,

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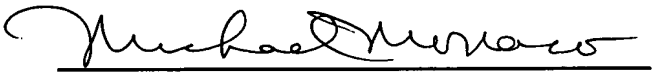
MAIER & NEUSTADT, P.C.



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